



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,555	11/15/2001	Masayuki Kimata	Q67299	7542

7590 08/26/2005
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC.
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

EXAMINER

BAYARD, EMMANUEL

ART UNIT PAPER NUMBER

2638

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,555

Applicant(s)

KIMATA, MASAYUKI

Examiner

Emmanuel Bayard

Art Unit

2638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,8,11,12,14 and 18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,2,4,8,11,12,14 and 18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is in response to amendment filed on 6/20/05 in which claims 1, 2, 4, 8, 11-12, 14 and 18 are pending and claims 3, 5-7, 9-10, 13, 15-17 and 19-20 are canceled. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection. Therefore this case is made final.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishii et al U.S. patent No 6,714,584 B1.

As per claims 1 and 11, Ishii et al teaches an adaptive array antenna receiving apparatus, which receives a CDMA, transmitted signal by a plurality of antenna elements forming an adaptive array antenna and which includes a plurality of fingers for receiving a multipath signal, said receiving apparatus comprising (see figs.1-2): a plurality of despreading means (see fig.2 elements 611-61N) forming said plurality of fingers, respectively each of said despreading means being connected to said antenna elements (elements 1-1-N) and supplied with received signals from said antenna elements for despreading the received signals to produce despread signals (see figs 1-

Art Unit: 2638

2 elements 611-61N); a plurality of weighting factor multiplying means (see fig.2 elements 62-1-62-N and col.3, lines 51-55) also forming said fingers, respectively and supplied with the despread signals from said plurality of despreding means, respectively, each of said weighting factor multiplying means being for multiplying the despread signals by weighting factors calculated for said antenna elements to produce a weighted signal (see fig.2 elements 62-1-N 62-L-N and col.3, lines 51-55) for a corresponding one of said fingers; an adder is the same as the claimed (combining means) (see fig.2 element 7 and col.4, lines 10-13) for adding (combining) (element 7) the weighted signals supplied from said weighting factor multiplying means to produce a rake combined signal; error signal producing means (see fig.2 element 8 and col.4, lines 13-38) supplied with the rake combined signal and a reference signal for calculating a difference between the rakes combined signal and the reference signal to produce a common error (see col.4,lines 19-38) signal representative of the difference; and a plurality of adaptive update weight vectors is the same as the claimed (plurality of antenna weight control means) (see fig.2 elements 69-1- 69-L and col.4, lines 23-38) also forming said fingers respectively and supplied with the de-spread signals from said de-spreding means included in corresponding ones to said, respectively, and with the common error signal in common and connected to said weighting factor multiplying means, each of said predetermined number of control means being for controlling the weighting factors for each of said weighting factor multiplying means so that a mean square of the common error signal is minimized (see col.4,lines 19-38) wherein each of said antenna weight control means controls the weighting factors for each of said

weighting factor multiplying means by using an N-order, wherein N is greater than or equal to two, correlation (see col.5, lines 9-17) matrix as an adaptive update algorithm wherein there are N antenna elements .

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 4, 8, 12, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al U.S. Patent No 6,714,584 B1 in view of Wang et al U.S. Patent No 6,289,062 B1.

As per claims 2 and 12, Ishii et al teaches all the features of the claimed invention except a (RLS)(Recursive Least Square) algorithm as an adaptive update algorithm for controlling the weighting factors for each of said predetermined number of weighting factor multiplying means.

Wang et al teaches a (RLS)(Recursive Least Square) algorithm as an adaptive update algorithm for controlling the weighting factors for each of said predetermined number of weighting factor multiplying means (see fig.8 element 42 and col.6, lines 44-46).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wang et al into Ishii et al as to provide the tapped delay line a plurality of weights to integrate them into incoming multi-path signals as taught by Wang et al (see col.6, lines 45-47).

As per claims 4 and 14, Ishii et al teaches all the features of the claimed invention except a deciding means (11) for making a data decision upon the rake combined signal produced by said rake combining means to produce a decision output signal and switching means (12) for selectively switching the decision output signal produced by said deciding means and the reference signal, said switching means being controlled so that, when the received signal is the pilot signal and when the received signal is a data signal other than the pilot signal, the reference signal and the decision output signal are selected, respectively, to be supplied to said error signal producing means.

Wang et al teaches a detector is functionally equivalent to the claimed (deciding means) (see figs.3, 8 element 44) for making a data decision upon the rake combined signal produced by said rake combining means to produce a decision output signal and switching means (see figs.3, 8 element 47) for selectively switching the decision output signal produced by said deciding means and the reference signal, said switching means being controlled so that, when the received signal is the pilot signal and when the received signal is a data signal other than the pilot signal, the reference signal and the decision output signal are selected, respectively, to be supplied to said error signal producing means (see col.4, lines 1-67).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wang into Ishii as to produce intermediary digital output in order to clearly define binary output with uniform quantization level as taught by Wang et al (see col.4, lines 43-60).

As per claims 4 and 14, Ishii et al teaches all the features of the claimed invention except wherein each of said predetermined number L of control means uses an SMI (Sample Matrix Inversion) algorithm as an adaptive update algorithm for controlling the weighting factors.

Wang et al teach wherein each of said predetermined number L of control means uses an SMI (Sample Matrix Inversion) (see col.2, lines 33-37 and col.6, lines 30-40) algorithm as an adaptive update algorithm for controlling the weighting factors.

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wang into Ishii as to read a whole set of data samples by the weight controller fed by error processor as taught by Wang (see col.6, lines 40-45).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hiramatsu et al U.S. Patent No 5,966,095 teaches an adaptive array.

Yukimoto et al U.S. Patent No 6,191,736 B1 teaches a data communication apparatus.

Sawahashi et al U.S. Patent No 6,069,912 teaches a diversity receiver.

Rilling U.S. Patent No 6,628,929 B1 teaches one tuner adaptive array.

Art Unit: 2638

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vanderpuye Kenneth can be reached on 571 272 3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2638

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

8/23/05

Emmanuel Bayard
Primary Examiner
Art Unit 2638



**EMMANUEL BAYARD
PRIMARY EXAMINER**